



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200  
Fax 613 632-5246



D5810-9

Job Sheet 207555



POSITIVE RECALL

EFFECTIVE 3/15/20 AUTH *MRL*

RELEASED \_\_\_\_\_ DATE \_\_\_\_\_



Part No: D5810-9

Job Qty: 4 pcs

Part Name: Spine



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 2/27/20

Job Tracking No:

Due Date: 4/27/20

Created By: Jennifer Renwick

Type: Stock

Description:

Note: URF 20-522 DWG D5810 Rev A IPP Rev. A 2020.01.30 New issue DP Verify DD

Ship Via:

## Bill of Materials

## Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Large Fab - Welded Assy-1	4 pcs	4/27/20	4/27/20	0.00	0.40	Large Fab - 1		
							Large Fab - 10		
							Large Fab - 2		
							Large Fab - 3		
							Large Fab - 4		
							Large Fab - 5		
							Large Fab - 6		
							Large Fab - 7		
							Large Fab - 8		
							Large Fab - 9		
							Large Fab - 11 (Various)		<i>MRL</i>
120	QC 5	4 pcs	4/27/20	4/27/20	0.00	0.00	Large Fab - 12		
							QC 5 - 10		
							QC 5 - 12		
							QC 5 - 17		
							QC 5 - 18		
							QC 5 - 19		
							QC 5 - 22		
							QC 5 - 24		
							QC 5 - 3		
							QC 5 - 43		
							QC 5 - 49		
							QC 5 - 51		
							QC 5 - 58		
							QC 5 - 65		
							QC 5 - 9		
							QC 5 - 50		
							QC 5 - 30		
							QC 5 - 40		
							QC 5 - 61		
							QC 5 - 81		



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
CANADA  
TEL.: 1 613 632-5200  
Email: sales@dartaero.com  
www.dartaerospace.com

Container No: S263854



Part: D5810-9

Job No: 207555

Serial No/Batch: S263854

Revision: A

Inspector:

Exp Date:

Instructions:

Date: 03/16/20

DAS  
40  
9-89

MAR 17 2020

Plex 3/12/20 8:06 AM Dart.lajeunesse.marie

130 Packaging 3-1 - Stock - B4B 4 pcs

4/27/20

0.00 0.00

Packaging 3 - 1 - B4B

Packaging 3 - 2 - B4B

Packaging 3 - 3 - B4B

Packaging 3 - 4 - B4B

Packaging 3 - 5 - B4B

Packaging 3 - 6 - B4B

Packaging 3 - 7 - B4B

Packaging 3 - 8 - B4B

Packaging 3 - 9 - B4B

Packaging 3 - 10 - B4B

Packaging 3 - 11 - B4B

Packaging 3 - 12 - B4B

Packaging 3 - 13 - B4B

Packaging 3 - 14 - B4B

Packaging 3 - 15 - B4B

Packaging 3 - 16 - B4B

Packaging 3 - 17 - B4B

Packaging 3 - 18 - B4B

Packaging 3 - 19 - B4B

Packaging 3 - 20 - B4B

Packaging 3 - 21 - B4B

Packaging 3 - 22 - B4B

Packaging 3 - 23 - B4B

Packaging 3 - 24 - B4B

Packaging 3 - 25 - B4B

Packaging 3 - 26 - B4B

Packaging 3 - 27 - B4B

Packaging 3 - 28 - B4B

Packaging 3 - 29 - B4B

Packaging 3 - 30 - B4B

Packaging 3 - 31 - B4B

Packaging 3 - 32 - B4B

Packaging 3 - 33 - B4B

Packaging 3 - 34 - B4B

Packaging 3 - 35 - B4B

Packaging 3 - 36 - B4B

Packaging 3 - 37 - B4B

140 QC 21 - SA

4 pcs

4/27/20

0.00 0.00

QC 21 - SA - 21

QC 21 - SA - 70

QC 21 - SA - 53

Part Op 110 - Fabricate per Drwg - 1-Cut as per DWG, 2-Debur.

Descriptions: 120 - QC5- Inspect part completeness to step on W/O

130 - Identify as per dwg & Stock Location: *WA 004*

140 - QC21- Final Inspection - Work Order Release

## Job BOM

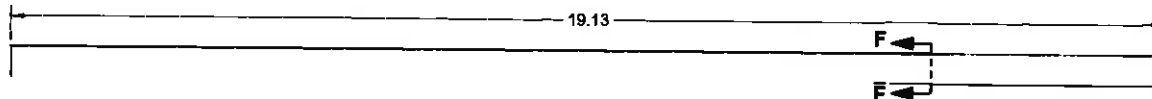
Part / Item	Component Name	Quantity	Operation	Container
M4130NTS0.750W.035	4130 Square Tube 0.750 X 0.035W	6.4400 ft (1.61 ea)	110-Large Fab - Welded Assy-1	<i>526057A</i>

## Job Allocations

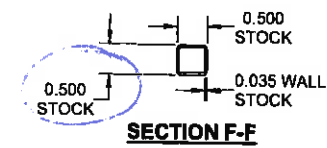
Operation	Component Part	Required	Inventory	Allocated
110-Large Fab - Welded Assy-1	M4130NTS0.750W.035	6	324	0

## Part Specifications

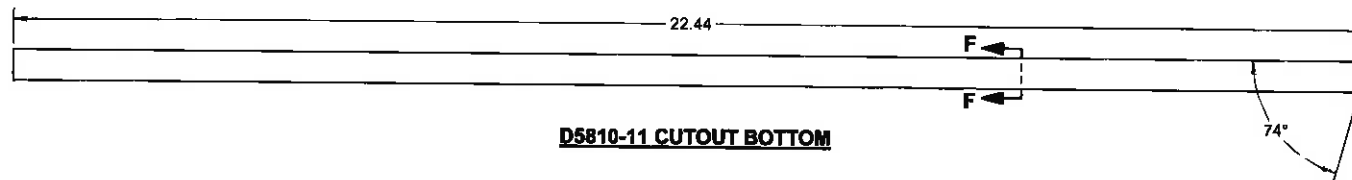
Specifications could not be found.



**D5810-9 SPINE**



**SECTION F-F**



**D5810-11 CUTOUT BOTTOM**

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

207555 MJS  
20-0312

UNDER REVIEW

URF 2020-522 20.02.14 (NO)

**NOTES:**

- 1) MATERIAL: AISI 4130N STEEL SQUARE TUBING, 1/2 X 0.035 WALL  
PER MIL-T-8736 OR AMS 6371/6380/6381/6362/6373/6374  
REF DART SPEC M4130N-TS0.500W.035
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: -9: 0.34 lbs  
-11: 0.39 lbs

**RELEASED**

2020 FEB 18 NO

APPROVED

DESIGN	ZF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA DRAWING NO. <b>D5810</b> TITLE <b>XL BASKET BODY</b> COPYRIGHT © 2020 BY DART AEROSPACE LTD <small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	REV. A
DRAWN	ZF		SHEET 5 OF 7
CHECKED	KPT		SCALE
MFG. APPR.	DD		NTS
APPROVED	NO		
DE APPR.	CP		
DATE	20.01.20		

## INSPECTION SHEET

Rev	Date	Change	Revised by	Approved
A	14.07.31	New Issue	KJ	

2/19/2020

## PURCHASE ORDER



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

# PURCHASE ORDER POHB045883



**Supplier:** FAC001-VU  
Factory Steel  
14020 Oakland Ave.  
Detroit, MI 48203 USA  
Phone: 313 883 6300  
Fax: 313 883 4883

**Ship To:** 1270 Aberdeen Street  
Hawkesbury  
ON  
K6A 1K7 Canada  
Phone: 613-632-5200

**PO No:** POHB045883

**PO Date:** 2/18/20

**Due Date:** 2/28/20

**Purchase Order**

**Revision:**

**Revision Date:**

FEB 19 2020

**Issued By:** Lavoie, Chantal  
Phone: 613-632-5200 Ext: 242  
Fax: 613-632-1053  
clavoie@dartaero.com

**Via:** Ground

**Print Terms:** Net 30

**Freight Terms:**

**Special Comments:**

Items														
Line Item	Job	Part	Drawing	Supplier Part No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price	
1		M4130NTS0.500W.035			4130 Square Tube .500 X .500 X .035W MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft	Firmed	-	2/28/20	600 ft	0 ft 61124 603	600 ft	\$6.49/ft DAS MAR 04 2020	\$3,894.00	
Grand Total:													\$3,894.00	

## Order Notes

## Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable). No Raw Metals from China or Soviet Bloc Countries. (DFARS)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program.

A049 supplier awareness.

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

Plex 2/19/20 2:52 PM Dart.Lavoie.Chantal

# PACKING LIST

No. 67811

PG 1 OF 1

FACTORY STEEL & METAL SUPPLY  
14020 OAKLAND AVENUE  
DETROIT, MI 48203

(313)883-6300 PHONE  
(313)883-4883 FAX

SOLD TO  
DART AEROSPACE  
1270 ABERDEEN STREET  
HAWKESBURY, ON K6A 1K7

CUSTOMER PO  
POH8045883  
CUSTOMER JOB

SALES ORDER 60752  
ORDER DATE 02/19/2020

SHIP TO  
DART AEROSPACE  
1270 ABERDEEN STREET  
HAWKESBURY, ON K6A 1K7

BUYER  
CHANTEL LAVOIE  
Tel (613) 632-3336  
Fax (613) 632-4443

SALES REP  
MICK HALON

SHIP INST  
CALL WHEN READY  
PRO#

TERMS  
NET 30 DAYS

SHIP DATE  
02/21/2020

SHIP VIA  
\*\*\*\*TRUCK\*\*\*\*

RESALE #  
59-2958719

CARRIER  
TRUCK

BLIND Y/N  
N

FOB  
DETROIT

LINE	QUANTITY	DESCRIPTION	WIDTH	LENGTH	WEIGHT
1	611.667 FT	<p>PACK IN CARDBOARD TUBE</p> <p>4130N CD SHLSS SQ TUBE 1/2" X .035W HILT-6736</p> <p>Tag Hilt Ref # Heat 154506 023914 25537</p> <p>MTRS (CIRCLE) FAX SHIPMENT INVOICE ALL</p> <p>DATE: INITIAL:</p>	21' / 24' RL	21' / 24' RL	135.361
<p>TOTAL WT 135 LBS</p> <p>RECEIVED BY SIGNATURE</p> <p>RECEIVED BY PRINTED NAME</p> <p>DATE RECEIVED</p>					

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130NT50.500W.035 PO / BATCH NO.: P0480Y5803  
 DATE: MAR 04 2020 5260577

MATERIAL CERT REC'D: YES THICKNESS ORDERED: .500X.500 W.035  
 QUANTITY RECEIVED: 611 FT THICKNESS RECEIVED: .500X.520 W.035  
 QUANTITY INSPECTED: 611 FT SHEET SIZE ORDERED:                       
 QUANTITY REJECTED: 0 SHEET SIZE RECEIVED:                     

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/> N	
CORROSION	Y <input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> N	MIL-T-6736
CORRECT THICKNESS	<input checked="" type="checkbox"/> N	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/>	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> N	HIT 25537
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

*testers located in the Quality Office*

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>                    </u>	SIGNED OFF BY: <u>                    </u>		
DATE: <u>MAR 04 2020</u>	DATE: <u>                    </u>		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

LIME 1

M4130NTS0.500W.035

10413045883



DESIGN DH	DRAWN BY DH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [initials]	APPROVED [initials]	DRAWING NO. M4130N-TS	REV. A SHEET 1 OF 1
DATE 05.02.09		TITLE 4130N SQUARE TUBING	SCALE NTS
A	05.02.09	NEW ISSUE	

PURCHASE MATERIAL:

AISI 4130N STEEL SQUARE TUBING PER ONE OF  
THE FOLLOWING SPEC'S: MIL-T-6736, AMS 6371,  
6360, 6361, 6362, 6373 OR 6374

PART NUMBER:

M4130N-TS | A.AAA | W | .ITT |

DAS  
[initials]

WHERE A.AAA = WIDTH IN INCHES  
ITT = WALL THICKNESS IN INCHES

EXAMPLE: 0.50" X 0.035" WALL = M4130N-TS0.500W.035

05.02.09 [initials]

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2200 East 12th Street, Streater, Michigan 48104  
Phone: (313) 273-1515 Fax: (313) 272-7333  
TEST YOUR SOURCE ACCEPT NO SUBSTITUTIONS

# PRODUCT CERTIFICATION

SALES ORDER - LINE / RLS

170007 - 1 / 0

## SHIP TO

Factory Steel & Metal Supply C  
14020 Oakland Avenue  
Detroit, MI 48203  
USA

WORK ORDER 023914

HEAT NUMBER 25537

MELT SOURCE Timken Steel Melt/Mfg. USA

PCS/HEAT

0

DAS

9-03

CUSTOMER P.O. 3999	CUSTOMER PART SQ-N12035	QUANTITY	LADING NO	CERT ID / REV /	CERT DATE								
<b>PART DESCRIPTION</b> SHSQ0500035J200 ***** Square OD ***** Side1: 0.5000 Max:0.5100 Min:0.4900 Side2: 0.5000 Max:0.5100 Min:0.4900 Wall: 0.0350 Max:0.0380 Min:0.0320 Length: 18.00±0.39 Spec: MIL-T 6736B Seamless Aircraft Grade: 430 Anneal: Cond N													
<b>CERTIFICATION REQUIREMENTS</b> FAR BAA (FAR 52.225-1 Buy America Act Supplies), DFARS 252.225-7001 Buy America Act & Bal. of Payments Program FAR TAA (FAR 52.225-6 Trade Agreements) Paragraph 33.2 of this material was tested in accordance with the requirements of ASTM A-450. The Grain size is determined and reported by the raw material supplier in accordance to ASTM E-112. This raw material was magnetic particle inspected by the raw material supplier in accordance to AMS 2640 and/or ASTM E-1444, and rated as Frequency, and Severity to AMS 2301, latest revision. Yield is determined by using the 0.2% offset method. Additional Specifications - AMS-T 6736B, 6380P & 6371L. Material produced in accordance to ASTM A-619-17. Jominy results: J(5/16")=38 J(8/16")=31.													
<b>Chemical Analysis</b>													
C	Mn	P	S	Si	Al	Cr	Mo	Ni	Fe	Cu	V	Ti	Sn
.30	.56	.008	.005	.29	.025	1.02	.20	.13	.000	.18	.009	.003	.009
<b>Physical Properties</b>													
Frag.	Severity	Grain Size											
.000	.000	7											
<b>Mechanical Properties</b>													
<b>TEST</b>	<b>UNITS</b>	<b>#TESTS</b>	<b>HIGH</b>	<b>LOW</b>	<b>AVERAGE</b>	<b>STD-DEV</b>							
Tensile	Psi	6	121110	115340	118173	2536							
Yield	Psi	6	115370	109700	112525	2436							
Elongation	%	6	17	17	17	0							
Rockwell C	Rc	6	22	22	22	0							
<b>TEST</b>	<b>RESULT</b>												
Decarb/OD	Pass												
Total lb/OD decarb	Pass												

I certify that the results are a true and correct copy of the records prepared and maintained by Plymouth Tube Company, Streater in compliance with the requirements of the cited specification. Chemistry is as reported by the Steel supplier. This test report cannot be reproduced or distributed except in full without the written permission of Plymouth Tube.

*James R. Derosier*  
Quality Assurance



**PLYMOUTH TUBE CO.**  
 1200 East 12th Street, Streator, Illinois 61354  
 Phone: (815) 673-1945 Fax: (815) 622-7345  
**TEST YOUR SOURCE! ACCEPT NO SUBSTITUTIONS!**

# PRODUCT CERTIFICATION

SALES ORDER - LINE / RLS

179507~1 / 0

WORK ORDER 03397

PCS/HEAT 0

HEAT NUMBER 25537

MELT SOURCE Hinkley Steel - Melt/Mfg. USA

## SHIP TO:

Factory Steel & Metal Supply C  
 14020 Oakland Avenue  
 Detroit, MI 48203  
 USA

CUSTOMER P.O. 3999	CUSTOMER PART SQ-N12035	QUANTITY	LOADING NO	CERT ID / REV /	CERT DATE
PART DESCRIPTION SHSQ0500035J200					
<b>Additional Specification(s)</b>					
<u>TEST</u> Brinell	<u>UNITS</u> Brinell	<u>#TESTS</u> 6	<u>HIGH</u> 251	<u>LOW</u> 197	<u>AVERAGE</u> 225
					<u>STD-DEV</u> 27
<p>This test report data is for the heat Chemistry stated above.</p> <p>The material in this test report is:</p> <ol style="list-style-type: none"> <li>1) Drawn in the USA</li> <li>2) Free from Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE), and Mercury contamination.</li> <li>3) NAFTA compliant.</li> </ol> <p style="text-align: right;">End of Certification</p>					

DAS  
9-29

I certify that the results are a true and correct copy of the records prepared and maintained by Plymouth Tube Company, Streator in compliance with the requirements of the cited specification. Chemistry is as reported by the Steel supplier. This test report cannot be reproduced or distributed except in full without the written permission of Plymouth Tube.

*Janet Derosa*  
 Quality Assurance

Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

Job: _____  Part No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/>	<b>DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Water Jet <input type="checkbox"/>            Supplier <input type="checkbox"/>            Quality <input type="checkbox"/> </div> </div>			
Date :	Sequence #:	QTY Affected :		MRB (QS1042)	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
<b>Root Cause</b>  <div style="display: flex; flex-direction: column;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Presservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div>		<b>FAULT CATEGORY</b>  <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced  <input type="checkbox"/> Bending  <input type="checkbox"/> Crushing  <input type="checkbox"/> Cracks  <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist  <input type="checkbox"/> Marks/Chatter  <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination  <input type="checkbox"/> Misaligned/off center  <input type="checkbox"/> BOM/Route  <input type="checkbox"/> Broken/Damage/Defect  <input type="checkbox"/> Incomplete/Unclear Instructions  <input type="checkbox"/> Drill Holes  <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Folio/Program  <input type="checkbox"/> Grain Direction  <input type="checkbox"/> Weld  <input type="checkbox"/> Wrong Stock Pulled  <input type="checkbox"/> Out of Sequence  <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong  <input type="checkbox"/> Outside Tolerance  <input type="checkbox"/> Drawing  <input type="checkbox"/> Finish  <input type="checkbox"/> Part Lost/Missing  <input type="checkbox"/> Misread         </div> </div>			
Other/Details:					